

10.3.1.2 Provide SONET standard interfaces which properly interwork with SONET standard equipment from other vendors. This includes, but is not limited to, SONET standard Section, Line and Path performance monitoring, maintenance signals, alarms, and data channels.

10.3.1.3 Provide Data Communications Channel (DCC) or equivalent connectivity through the SONET transport system. Dedicated Transport provided over a SONET transport system shall be capable of routing DCC messages between MCIm and SONET network components connected to the Dedicated Transport. For example, if MCIm leases a SONET ring from ILEC, that ring shall support DCC message routing between MCIm and SONET network components connected to the ring.

10.3.1.4 Support the following performance requirements for each circuit (STS-1, DS1, DS3, etc.):

10.3.1.4.1 No more than 10 Errored Seconds Per Day (Errored Seconds are defined in the technical reference at Section 10.4.5); and

10.3.1.4.2 No more than 1 Severely Errored Second Per Day (Severely Errored Seconds are defined in the technical reference at Section 10.4.5).

10.3.2 SONET rings shall:

10.3.2.1 Be provisioned on physically diverse fiber optic cables (including separate building entrances where available and diversely routed intraoffice wiring). "Diversely routed" shall be interpreted as the maximum feasible physical separation between transmission paths, unless otherwise agreed by MCIm.

10.3.2.2 Support dual ring interworking per SONET Standards.

10.3.2.3 Provide the necessary redundancy in optics, electronics, and transmission paths (including intra-office wiring) such that no single failure will cause a service interruption.

10.3.2.4 Provide the ability to disable ring protection switching at MCIm's direction (selective protection lock-out). This requirement applies to line switched rings only.

10.3.2.5 Provide the ability to use the protection channels to carry traffic (extra traffic). This requirement applies to line switched rings only.

10.3.2.6 Provide 50 millisecond restoration unless a ring protection delay is set to accommodate dual ring interworking schemes.

10.3.2.7 Have settable ring protection switching thresholds that shall be set in accordance with MCIm's specifications.

10.3.2.8 Provide revertive protection switching with a settable wait to restore delay with a default setting of 5 minutes. This requirement applies to line switched rings only.

10.3.2.9 Provide non-revertive protection switching. This requirement applies to path switched rings only.

10.3.2.10 Adhere to the following availability requirements, where availability is defined in the technical reference set forth in Section 10.4.5.

10.3.2.10.1 No more than 0.25 minutes of unavailability month; and

10.3.2.10.2 No more than 0.5 minutes of unavailability per year.

10.4 At a minimum, Dedicated Transport shall meet each of the requirements set forth in Section 9.2.3 and in the following technical references.

10.4.1 ANSI T1.105.04-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Data Communication Channel Protocols and Architectures;

10.4.2 ANSI T1.119-1994, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Operations, Administration, Maintenance, and Provisioning (OAM&P) Communications;

10.4.3 ANSI T1.119.01-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) Operations, Administration, Maintenance, and Provisioning (OAM&P) Communications Protection Switching Fragment;

10.4.4 ANSI T1.119.02-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) Operations, Administration, Maintenance, and Provisioning (OAM&P) Communications Performance Monitoring Fragment;

10.4.5 ANSI T1.231-1993 -American National Standard for Telecommunications - Digital Hierarchy - Layer 1 In-Service Digital Transmission performance monitoring.

## **10.5 Digital Cross-Connect System (DCS)**

### **10.5.1 Definition:**

10.5.1.1 DCS is a function which provides automated cross connection of Digital Signal level 0 (DS0) or higher transmission bit rate digital channels within physical interface facilities. Types of DCSs include but are not limited to DCS 1/0s, DCS 3/1s, and DCS 3/3s, where the nomenclature 1/0 denotes interfaces typically at the DS1 rate or greater with cross-connection typically at the DS0 rate. This same nomenclature, at the appropriate rate substitution, extends to the other types of DCSs specifically cited as 3/1 and 3/3. Types of DCSs that cross-connect Synchronous Transport Signal level 1 (STS-1 s) or other Synchronous Optical Network (SONET) signals (e.g., STS-3) are also DCSs, although not denoted by this same type of nomenclature. DCS may provide the functionality of more than one of the aforementioned DCS types (e.g., DCS 3/3/1 which combines functionality of DCS 3/3 and DCS 3/1). For such DCSs, the requirements will be, at least, the aggregation of requirements on the "component" DCSs.

10.5.1.2 In locations where automated cross connection capability does not exist, DCS will be defined as the combination of the functionality provided by a Digital Signal Cross-Connect (DSX) or Light Guide Cross-Connect (LGX) patch panels and D4 channel banks or other DS0 and above multiplexing equipment used to provide the function of a manual cross connection.

10.5.1.3 Interconnection between a DSX or LGX, to a switch, another cross-connect, or other service platform device, is included as part of DCS.

## **10.6 DCS Technical Requirements**

10.6.1 DCS shall provide completed end-to-end cross connection of the channels designated by MCIm.

10.6.2 DCS shall perform facility grooming, multipoint bridging, one-way broadcast, two-way broadcast, and facility test functions.

10.6.3 DCS shall provide multiplexing, format conversion, signaling conversion, or other functions.

10.6.4 The end-to-end cross connection assignment shall be input to the underlying device used to provide DCS from an operator at a terminal or via an intermediate system. The cross connection assignment shall remain in effect whether or not the circuit is in use.

10.6.5 ILEC shall continue to administer and maintain DCS, including updates to the control software to current available releases.

10.6.6 ILEC shall provide various types of Digital Cross-Connect Systems including:

10.6.6.1 DS0 cross-connects (typically termed DCS 1/0);

10.6.6.2 DS1/VT1.5 (Virtual Tributaries at the 1.5Mbps rate) cross-connects (typically termed DCS 3/1);

10.6.6.3 DS3 cross-connects (typically termed DCS 3/3);

10.6.6.4 STS-1 cross-connects; and

10.6.6.5 Other technically feasible cross-connects designated by MCIm.

10.6.7 ILEC shall provide immediate and continuous configuration and reconfiguration of the channels between the physical interfaces (i.e., ILEC shall establish the processes to implement cross connects on demand, or, at MCIm's option, permit MCIm control of such configurations and reconfigurations).

10.6.8 ILEC shall provide scheduled configuration and reconfiguration of the channels between the physical interfaces (i.e., ILEC shall establish the processes to implement cross connects on the schedule designated by MCIm, or, at MCIm's option, permit MCIm to control such configurations and reconfigurations).

10.6.9 DCS shall continuously monitor protected circuit packs and redundant common equipment.

10.6.10 DCS shall automatically switch to a protection circuit pack on detection of a failure or degradation of normal operation.

10.6.11 The underlying equipment used to provide DCS shall be equipped with a redundant power supply or a battery back-up.

10.6.12 ILEC shall make available to MCIm spare facilities and equipment necessary for provisioning repairs, and to meet MCIm's maintenance standards as specified in the Provisioning and Maintenance sections.

10.6.13 At MCIm's option, ILEC shall provide MCIm with real time performance monitoring and alarm data on the signals and the components of the underlying equipment used to provide DCS that actually impact or might impact MCIm's services. For example, this may include hardware alarm data and facility alarm data on a DS3 in which an MCIm DS1 is traversing.

10.6.14 At MCIm's option, ILEC shall provide MCIm with real time ability to initiate tests on integrated equipment used to test the signals and the underlying equipment used to provide DCS, as well as other integrated functionality for routine testing and fault isolation.

10.6.15 DCS shall provide SONET to asynchronous gateway functionality (e.g., STS-1 to DS1 or STS-1 to DS3).

10.6.16 DCS shall perform optical to electrical conversion where the underlying equipment used to provide DCS contains optical

interfaces or terminations (e.g., Optical Carrier level 3, i.e., OC-3, interfaces on a DCS 3/1).

10.6.17 DCS shall have SONET ring terminal functionality where the underlying equipment used to provide DCS acts as a terminal on a SONET ring.

10.6.18 DCS shall provide multipoint bridging of multiple channels to other DCSs. MCIm may designate multipoint bridging to be one-way broadcast from a single master to multiple tributaries, or two-way broadcast between a single master and multiple tributaries.

10.6.19 DCS shall multiplex lower speed channels onto a higher speed interface and demultiplex higher speed channels onto lower speed interfaces as designated by MCIm.

#### **10.7 DCS Interface Requirements**

10.7.1 ILEC shall provide physical interfaces on DS0, DS1, and VT1.5 channel cross-connect devices at the DS1 rate or higher. In all such cases, these interfaces shall be in compliance with applicable Bellcore, ANSI, ITU, and MCIm standards.

10.7.2 ILEC shall provide physical interfaces on DS3 channel cross-connect devices at the DS3 rate or higher. In all such cases, these interfaces shall be in compliance with applicable Bellcore, ANSI, ITU, and MCIm standards.

10.7.3 ILEC shall provide physical interfaces on STS-1 cross-connect devices at the OC-3 rate or higher. In all such cases, these interfaces shall be in compliance with applicable Bellcore, ANSI, ITU, and MCIm standards.

10.7.4 Interfaces on all other cross-connect devices shall be in compliance with applicable Bellcore, ANSI, ITU, and MCIm standards.

10.8 DCS shall, at a minimum, meet all the requirements set forth in the following technical references:

10.8.1 ANSI T1.102-1993, American National Standard for Telecommunications - Digital Hierarchy - Electrical Interfaces;

10.8.2 ANSI T1.102.01-199x, American National Standard for Telecommunications - Digital Hierarchy - VT1.5;

10.8.3 ANSI T1.105-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Basic Description including Multiplex Structure, Rates and Formats;

10.8.4 ANSI T1.105.03-1994, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Jitter at Network Interfaces;

10.8.5 ANSI T1.105.03a-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET): Jitter at Network Interfaces - DS1 Supplement;

10.8.6 ANSI T1.105.06-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Physical Layer Specifications;

10.8.7 ANSI T1.106-1988, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (Single Mode);

10.8.8 ANSI T1.107-1988, American National Standard for Telecommunications - Digital Hierarchy - Formats Specifications;

10.8.9 ANSI T1.107a-1990, American National Standard for Telecommunications - Digital Hierarchy - Supplement to Formats Specifications (DS3 Format Applications);

10.8.10 ANSI T1.107b-1991, American National Standard for Telecommunications - Digital Hierarchy - Supplement to Formats Specifications;

10.8.11 ANSI T1.117-1991, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (SONET) (Single Mode - Short Reach);

10.8.12 ANSI T1.403-1989, Carrier to Customer Installation, DS1 Metallic Interface Specification;

10.8.13 ANSI T1.404-1994, Network-to-Customer Installation - DS3 Metallic Interface Specification;

10.8.14 ITU Recommendation G.707, Network node interface for the synchronous digital hierarchy (SDH);

10.8.15 ITU Recommendation G.704, Synchronous frame structures used at 1544, 6312, 2048, 8488 and 44736 kbit/s hierarchical levels;

10.8.16 FR-440 and TR-NWT-000499, Transport Systems Generic Requirements (TSGR): Common Requirements;

10.8.17 GR-820-CORE, Generic Transmission Surveillance: DS1 & DS3 Performance;

10.8.18 GR-253-CORE, Synchronous Optical Network Systems (SONET); Common Generic Criteria; and

10.8.19 TR-NWT-000776, Network Interface Description for ISDN Customer Access.

## **Section 11. Signaling Link Transport**

### **11.1 Definition:**

Signaling Link Transport is a set of two or four dedicated 56 Kbps transmission paths between MCI-designated Signaling Points of Interconnection (SPOI) that provides appropriate physical diversity and a cross connect at an ILEC STP site.

### **11.2 Technical Requirements**

11.2.1 Signaling Link Transport shall consist of full duplex mode 56 Kbps transmission paths.

11.2.2 Of the various options available, Signaling Link Transport shall perform in the following two ways:

11.2.2.1 As an "A-link" which is a connection between a switch or SCP and a home Signaling Transfer Point Switch (STPs) pair; and

11.2.2.2 As a "D-link" which is a connection between two STPs pairs in different company networks (e.g., between two STPs pairs for two Competitive Local Exchange Carriers (CLECs)).



**11.2.3 Signaling Link Transport shall consist of two or more signaling link layers as follows:**

**11.2.3.1 An A-link layer shall consist of two links.**

**11.2.3.2 A D-link layer shall consist of four links.**

**11.2.4 A signaling link layer shall satisfy a performance objective such that:**

**11.2.4.1 There shall be no more than two minutes down time per year for an A-link layer, and**

**11.2.4.2 There shall be negligible (less than 2 seconds) down time per year for a D-link layer.**

**11.2.5 A signaling link layer shall satisfy interoffice and intraoffice diversity of facilities and equipment, such that:**

**11.2.5.1 No single failure of facilities or equipment causes the failure of both links in an A-link layer (i.e., the links should be provided on a minimum of two separate physical paths end-to-end); and**

**11.2.5.2 No two concurrent failures of facilities or equipment shall cause the failure of all four links in a D-link layer (i.e., the links should be provided on a minimum of three separate physical paths end-to-end).**

### **11.3 Interface Requirements**

**11.3.1 There shall be a DS1 (1.544 Mbps) interface at the MCI-designated SPOs. Each 56 Kbps transmission path shall appear as a DS0 channel within the DS1 interface.**

## ***Section 12. Signaling Transfer Points (STPs)***

### **12.1 Definition:**

**Signaling Transfer Points (STPs) provide functionality that enable the exchange of SS7 messages among and between switching elements, database elements and signaling transfer points. Figure 4 depicts Signaling Transfer Points.**

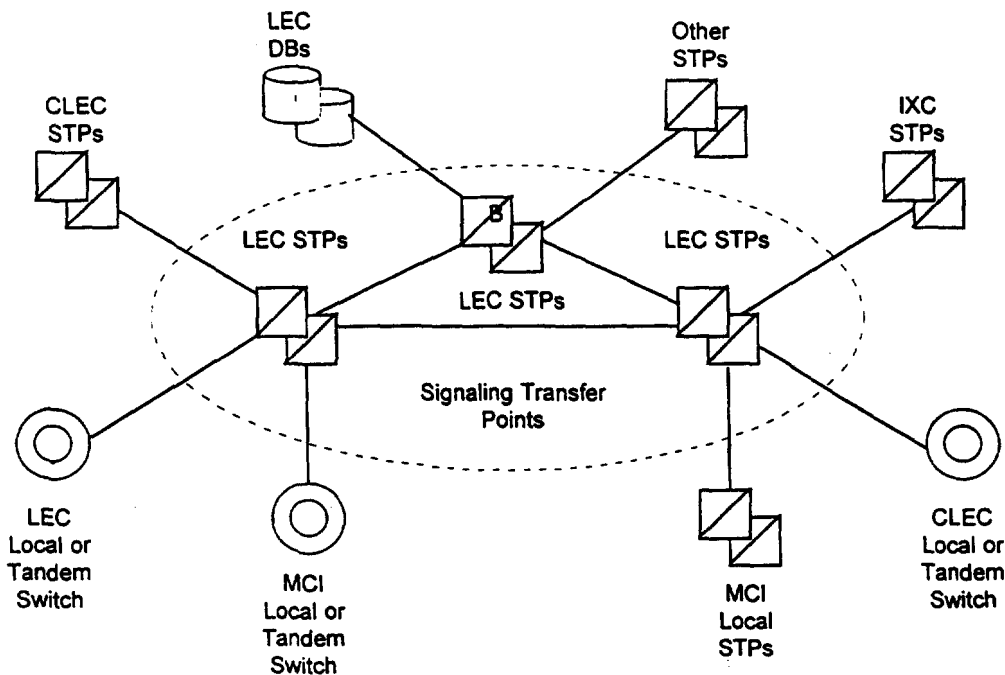


Figure 4

## 12.2 Technical Requirements

12.2.1 STPs shall provide access to all other Network Elements connected to the ILEC SS7 network. These include:

12.2.1.1 ILEC Local Switching or Tandem Switching;

12.2.1.2 ILEC Service Control Points/DataBases;

12.2.1.3 Third-party local or tandem switching systems; and

12.2.1.4 Third-party-provided STPs.

12.2.2 The connectivity provided by STPs shall fully support the functions of all other Network Elements connected to ILEC's SS7 network. This explicitly includes the use of ILEC's SS7 network to convey messages which neither originate nor terminate at a signaling end point directly connected to the ILEC SS7 network (i.e., transit messages). When the ILEC SS7 network is used to

convey transit messages, there shall be no alteration of the Integrated Services Digital Network User Part (ISDNUP) or Transaction Capabilities Application Part (TCAP) user data that constitutes the content of the message.

12.2.3 If a ILEC tandem switch routes calling traffic, based on dialed or translated digits, on SS7 trunks between an MCIm local switch and third party local switch, ILEC's SS7 network shall convey the TCAP messages that are necessary to provide Call Management features (Automatic Callback, Automatic Recall, and Screening List Editing) between the MCIm local STPs and the STPs that provide connectivity with the third party local switch, even if the third party local switch is not directly connected to ILEC's STPs.

12.2.4 STPs shall provide all functions of the MTP as specified in ANSI T1.111 (Reference 12.5.2). This includes:

12.2.4.1 Signaling Data Link functions, as specified in ANSI T1.111.2;

12.2.4.2 Signaling Link functions, as specified in ANSI T1.111.3; and

12.2.4.3 Signaling Network Management functions, as specified in ANSI T1.111.4.

12.2.5 STPs shall provide all functions of the SCCP necessary for Class 0 (basic connectionless) service, as specified in ANSI T1.112 (Reference 12.5.4). In particular, this includes Global Title Translation (GTT) and SCCP Management procedures, as specified in T1.112.4.

12.2.6 In cases where the destination signaling point is a ILEC local or tandem switching system or data base, or is an MCIm or third party local or tandem switching system directly connected to ILEC's SS7 network, ILEC STPs shall perform final GTT of messages to the destination and SCCP Subsystem Management of the destination. In all other cases, STPs shall perform intermediate GTT of messages to a gateway pair of STPs in an SS7 network connected with the ILEC SS7 network, and shall not perform SCCP Subsystem Management of the destination.

12.2.6 STPs shall also provide the capability to route SCCP messages based on ISNI, as specified in ANSI T1.118 (Reference 12.5.7), when this capability becomes available on ILEC STPs.

12.2.7 STPs shall provide all functions of the OMAP commonly provided by STPs, as specified in the reference in Section 12.5.6. This includes:

12.2.7.1 MTP Routing Verification Test (MRVT); and,

12.2.7.2 SCCP Routing Verification Test (SRVT).

12.2.8 In cases where the destination signaling point is a ILEC local or tandem switching system or DB, or is an MCIIm or third party local or tandem switching system directly connected to the ILEC SS7 network, STPs shall perform MRVT and SRVT to the destination signaling point. In all other cases, STPs shall perform MRVT and SRVT to a gateway pair of STPs in an SS7 network connected with the ILEC SS7 network. This requirement shall be superseded by the specifications for Internetwork MRVT and SRVT if and when these become approved ANSI standards and available capabilities of ILEC STPs.

12.2.9 STPs shall be equal to or better than the following performance requirements:

12.2.9.1 MTP Performance, as specified in ANSI T1.111.6; and

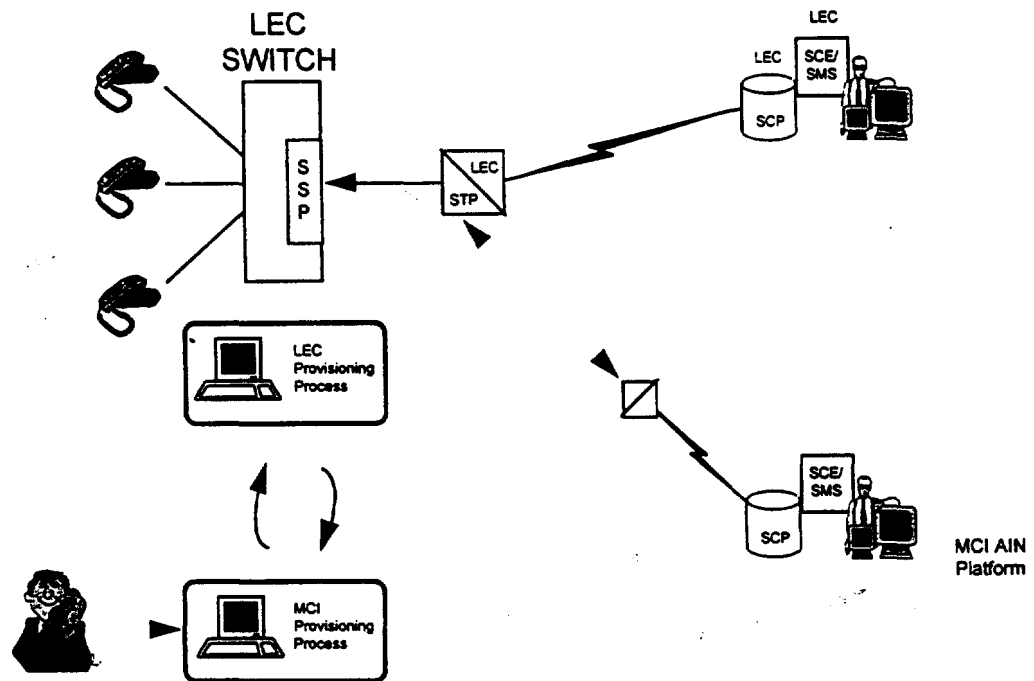
12.2.9.2 SCCP Performance, as specified in ANSI T1.112.5.

#### **12.2.10 SS7 Advanced Intelligent Network (AIN) Access**

12.2.10.1 SS7 AIN Access shall provide the MCIIm SCP access to the ILEC local switch via interconnection of the ILEC SS7 and MCIIm SS7 networks. This interconnection arrangement shall result in the ILEC local switch recognizing the MCIIm SCP as at least at parity with ILEC's SCPs in terms of interfaces, performance and capabilities.

12.2.10.2 SS7 AIN Access is the provisioning of AIN triggers in a ILEC local switch and interconnection of the ILEC SS7 network with the MCIIm SS7 network to exchange

TCAP queries and responses with an MCI SCP. See Figure 5 below.



**Figure 5**

12.2.10.3 Physical interconnection between the ILEC SS7 and the MCI SCP shall be through facilities and protocols as specified in the SS7 Network Interconnection section of this Agreement.

12.2.10.4 Reliability of interconnection shall be consistent with requirements for diversity and survivability as specified in the SS7 Network Interconnection section of this Agreement.

12.2.10.5 Delay associated with ILEC local switch queries to the MCI SCP shall be equal to or shorter than the delay associated with queries to the ILEC SCP.

12.2.10.6 ILEC STPs shall maintain global title translations necessary to direct AIN queries for select global title address and translation type values to the MCI SS7 network.

12.2.10.7 ILEC STPs shall route AIN responses from the MCI SCP via SS7 network interconnect to the local switch

designated in the Signaling Connection Control Part (SCCP) called party address.

12.2.10.8 Network management controls resulting from an overload in elements not supporting MCIIm customers shall not affect queries to MCIIm SCPs.

12.2.10.9 Requirements for billing and recording information to track AIN query-response usage shall be consistent with Connectivity Billing and Recording requirements as specified in Attachment VIII (e.g., recorded message format and content, timeliness of feed, data format and transmission medium).

12.2.10.10 ILEC shall provide to MCIIm all necessary testing resources and staff to perform service certification testing prior to service deployment in accordance with the Cooperative section of this Agreement.

12.2.10.11 When MCIIm selects SS7 AIN Access, ILEC will provide an interface to the ILEC STP provisioning process for provisioning of ILEC's STP global title translation data.

12.2.10.12 When MCIIm selects SS7 AIN Access, ILEC will provide interconnection of its SS7 network with the ILEC SS7 network for exchange of AIN TCAP messages as described in Section 12.2.10.13.2.

12.2.10.13 STPs shall offer SS7 AIN Access in accordance with the requirements of the following technical references:

12.2.10.13.1 GR-2863-CORE, CCS Network Interface Specification Supporting Advanced Intelligent Network (AIN); and

12.2.10.13.2 GR-2902-CORE, CCS Network Interface Specification (CCSNIS) Supporting Toll-Free Service Using Advanced Intelligent Network (AIN).

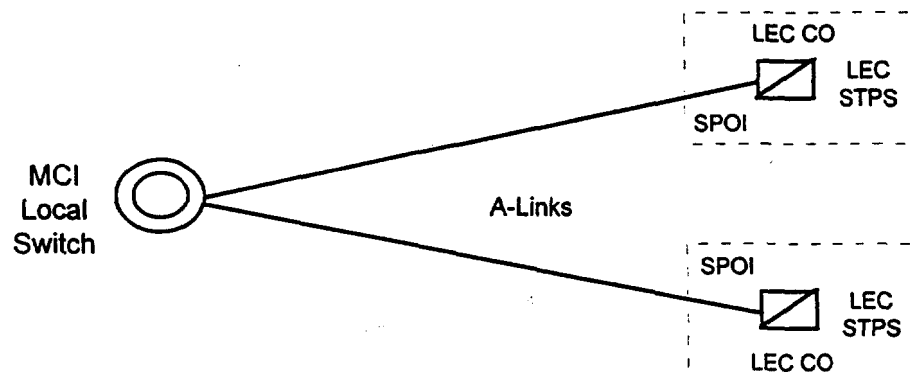
### **12.3 Interface Requirements**

12.3.1 ILEC shall provide the following STPs options to connect MCIIm or MCIIm-designated local switching systems or STPs to the ILEC SS7 network:

12.3.1.1 An A-link interface from MCI local switching systems; and,

12.3.2 Each type of interface shall be provided by one or more sets (layers) of signaling links, as follows:

12.3.2.1 An A-link layer shall consist of two links, as depicted in Figure 6.



**Figure 6. A-Link Interface**

12.3.3 The Signaling point of Interconnection (SPOI) for each link shall be located at a cross-connect element, such as a DSX-1, in the Central Office (CO) where the ILEC STPs is located. There shall be a DSI or higher rate transport interface at each of the SPOIs. Each signaling link shall appear as a DS0 channel within the DS1 or higher rate interface.

ILEC shall offer higher rate DS1 signaling for interconnecting MCI local switching systems or STPs with ILEC STPs as soon as these become approved ANSI standards and available capabilities of ILEC STPs.

12.3.4 ILEC shall provide MTP and SCCP protocol interfaces that shall conform to all sections relevant to the MTP or SCCP in the following specifications:

12.3.4.1 Bellcore GR-905-CORE, Common Channel Signaling Network Interface Specification (CCSNIS) Supporting Network Interconnection, Message Transfer Part (MTP), and Integrated Services Digital Network User Part (ISDNUP); and

**12.3.4.2 Bellcore GR-1432-CORE, CCS Network Interface Specification (CCSNIS) Supporting Signaling Connection Control Part (SCCP) and Transaction Capabilities Application Part (TCAP).**

**12.4 Message Screening**

**12.4.1 ILEC shall set message screening parameters so as to accept messages from MCIIm local or tandem switching systems destined to any signaling point in the ILEC SS7 network with which the MCIIm switching system has a legitimate signaling relation.**

**12.4.2 ILEC shall set message screening parameters so as to accept messages from MCIIm local or tandem switching systems destined to any signaling point or network interconnected to the ILEC SS7 network with which the MCIIm switching system has a legitimate signaling relation.**

**12.4.3 ILEC shall set message screening parameters so as to accept messages destined to an MCIIm local or tandem switching system from any signaling point or network interconnected to the ILEC SS7 network with which the MCIIm switching system has a legitimate signaling relation.**

**12.4.4 ILEC shall set message screening parameters so as to accept and send messages destined to an MCIIm SCP from any signaling point or network interconnected to the ILEC SS7 network with which the MCIIm SCP has a legitimate signaling relation.**

**12.5 STP Requirements**

**12.5.1 STPs shall be equal to or better than all of the requirements for STPs set forth in the following technical references:**

**12.5.2 ANSI T1.111-1992 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Message Transfer Part (MTP);**

**12.5.3 ANSI T1.111A-1994 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Message Transfer Part (MTP) Supplement;**

**12.5.4 ANSI T1.112-1992 American National, Standard for Telecommunications - Signaling System Number 7 (SS7) - Signaling Connection Control Part (SCCP);**



12.5.5 ANSI T1.115-1990 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Monitoring and Measurements for Networks;

12.5.6 ANSI T1.116-1990 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Operations, Maintenance and Administration Part (OMAP);

12.5.7 ANSI T1.118-1992 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Intermediate Signaling Network Identification (ISNI);

12.5.8 Bellcore GR-905-CORE, Common Channel Signaling Network Interface Specification (CCSNIS) Supporting Network Interconnection, Message Transfer Part (MTP), and Integrated Services Digital Network User Part (ISDNUP); and

12.5.9 Bellcore GR-1432-CORE, CCS Network Interface Specification (CCSNIS) Supporting Signaling Connection Control Part (SCCP) and Transaction Capabilities Application Part (TCAP).

### ***Section 13. Service Control Points/Databases***

#### **13.1 Definition:**

13.1.1 Databases are the Network Elements that provide the functionality for storage of, access to, and manipulation of information required to offer a particular service and/or capability. Databases include, but are not limited to: Number Portability, LIDB, Toll Free Number Database, Automatic Location Identification/Data Management System, access to Service Creation Environment and Service Management System (SCE/SMS).

13.1.2 A Service Control Point (SCP) is a specific type of Database Network Element functionality deployed in a Signaling System 7 (SS7) network that executes service application logic in response to SS7 queries sent to it by a switching system also connected to the SS7 network. SCPs also provide operational interfaces to allow for provisioning, administration and maintenance of subscriber data and service application data. (e.g., an 800 database stores customer record data that provides information necessary to route 800 calls).

## **13.2 Technical Requirements for SCPs/Databases**

Requirements for SCPs/Databases within this section address storage of information, access to information (e.g. signaling protocols, response times), and administration of information (e.g., provisioning, administration, and maintenance). All SCPs/Databases shall be provided to MCI in accordance with the following requirements, except where such a requirement is superseded by specific requirements set forth in Subsections 13.3 through 13.7:

**13.2.1** ILEC shall provide physical interconnection to SCPs through the SS7 network and protocols, as specified in Section 12 of this Attachment, with TCAP as the application layer protocol.

**13.2.2** ILEC shall provide physical interconnection to databases via industry standard interfaces and protocols (e.g., ISDN and X.25).

**13.2.3** The reliability of interconnection options shall be consistent with requirements for diversity and survivability as specified in Section 12 of this Attachment (which applies to both SS7 and non-SS7 interfaces).

**13.2.4** Database functionality shall be unavailable a maximum of 30 minutes per year.

**13.2.5** ILEC shall provide Database provisioning consistent with the provisioning requirements of this Agreement (e.g., data required, edits, acknowledgments, data format and transmission medium and notification of order completion).

**13.2.6** The operational interface provided by ILEC shall complete Database transactions (i.e., add, modify, delete) for MCI customer records stored in ILEC databases within 24 hours, or sooner where ILEC provisions its own customer records within a shorter interval.

**13.2.7** ILEC shall provide Database maintenance consistent with the maintenance requirements as specified in this Agreement (e.g., notification of ILEC Network Affecting Events, testing, dispatch schedule and measurement and exception reports).

**13.2.8** ILEC shall provide billing and recording information to track database usage consistent with connectivity billing and recording

requirements as specified in this Agreement (e.g., recorded message format and content, timeliness of feed, data format and transmission medium).

13.2.9 ILEC shall provide SCPs/Databases in accordance with the physical security requirements specified in this Agreement.

13.2.10 ILEC shall provide SCPs/Databases in accordance with the logical security requirements specified in this Agreement.

### **13.3 Number Portability Database**

#### **13.3.1 Definition:**

The Number Portability (NP) database supplies routing numbers for calls involving numbers that have been ported from one local service provider to another. NP database functionality shall also include Global Title Translations (GTT) for calls involving ported numbers even if

ILEC provides GTT functionality in another Network Element. This Subsection 13.3 supplements the requirements of Subsection 13.2 and 13.7. ILEC shall provide the Number Portability Database in accordance with the following:

#### **13.3.2 Requirements**

13.3.2.1 ILEC shall make ILEC NP database available for MCI switches to query to obtain the appropriate routing number on calls to ported numbers or the industry specified indication that the number is not ported for non-portable numbers in NPA-NXXs that are opened to portability. The specified indication will also be provided when the NPA-NXX is not open to portability;

13.3.2.2 Query responses shall provide such additional information, for example, Service Provider identification, as may be specified in the NP implementation in the relevant regulatory jurisdiction;

13.3.2.3 ILEC shall provide GTT for CLASS or LIDB queries routed to the ILEC network by MCI switches. ILEC database or other Network Element shall perform the GTT function and route the query to the appropriate switch or LIDB accordingly;

13.3.2.4 The NP database shall provide such other functionality as has been specified in the regulatory jurisdiction in which portability has been implemented;

13.3.2.5 Unavailability of the NP database query and GTT applications shall not exceed 4 minutes per year; and

13.3.2.6 The ILEC NP database shall respond to a query within 125 msec. of receipt of the query.

### 13.3.3 Interface Requirements

13.3.3.1 ILEC shall interconnect the signaling interface between the MCI or other local switch and the NP database using the TCAP protocol as specified in the technical reference in Section 13.7.1, together with the signaling network interface as specified in the technical reference in Section 13.7.2, and such further requirements (e.g., AIN or IN protocols) as may be specified by bodies responsible for implementation of number portability in the jurisdiction at hand; (e.g., Generic Requirements for SCP Application and GTT Function for Number Portability, Issue 0.3, Final Draft, March 22, 1996 [Editor - Ameritech Inc.]).

## 13.4 Line Information Database (LIDB)

This Subsection 13.4 defines and sets forth additional requirements for the Line Information Database. This Subsection 13.4 supplements the requirements of Subsection 13.2 and 13.7.

### 13.4.1 Definition:

The Line Information Database (LIDB) is a transaction-oriented database accessible through Common Channel Signaling (CCS) networks. It contains records associated with customer Line Numbers and Special Billing Numbers (in accordance with the requirements in the technical reference in Section 13.7.5). LIDB accepts queries from other Network Elements and provides appropriate responses. The query originator need not be the owner of LIDB data. LIDB queries include functions such as screening billed numbers that provides the ability to accept Collect or Third Number Billing calls and validation of Telephone Line Number based non-proprietary calling cards. The interface for the LIDB functionality is the interface between the ILEC CCS network and other CCS networks. LIDB also interfaces to administrative

Exhibit No.

Issue:

Witness:

Type of Exhibit:

Sponsor:

Case No:

Operations/Contract

Joann Russell

Direct Testimony

MCI Telecommunications Corp. et al.

TO-97-67

**MCI TELECOMMUNICATIONS CORPORATION, INC. and  
MCImetro ACCESS TRANSMISSION SERVICES, INC.**

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**DIRECT TESTIMONY OF**

**JOANN RUSSELL**

**SEPTEMBER, 1996**

systems. The administrative system interface provides Work Centers with an interface to LIDB for functions such as provisioning, auditing of data, access to LIDB measurements and reports.

#### **13.4.2 Technical Requirements**

**13.4.2.1** Prior to the availability of a long-term solution for Number Portability, ILEC shall enable MCIm to store in ILEC's LIDB any customer Line Number or Special Billing Number record, (in accordance with the technical reference in Section 13.7.5) whether ported or not, for which the NPA-NXX or NXX-0/IXX Group is supported by that LIDB.

**13.4.2.2** Prior to the availability of a long-term solution for Number Portability, ILEC shall enable MCIm to store in ILEC's LIDB any customer Line Number or Special Billing Number (in accordance with the technical reference in Section 13.7.5) record, whether ported or not, and NPA-NXX and NXX-0/IXX Group Records, belonging to an NPA-NXX or NXX-0/1 XX owned by MCIm.

**13.4.2.3** Subsequent to the availability of a long-term solution for Number Portability, ILEC shall enable MCIm to store in ILEC's LIDB any customer Line Number or Special Billing Number (in accordance with the technical reference in Section 13.7.5) record, whether ported or not, regardless of the number's NPA-NXX or NXX-0/IXX.

**13.4.2.4** ILEC shall perform the following LIDB functions (i.e., processing of the following query types as defined in the technical reference in Section 13.7.5) for MCIm's customer records in LIDB:

**13.4.2.4.1** Billed Number Screening (provides information such as whether the Billed Number may accept Collect or Third Number Billing calls); and

**13.4.2.4.2** Calling Card Validation.

**13.4.2.5** ILEC shall process MCIm's customer records in LIDB at least at parity with ILEC customer records, with respect to other LIDB functions (as defined in the technical reference in Section 13.5). ILEC shall indicate to MCIm

what additional functions (if any) are performed by LIDB in their network.

13.4.2.6 Within two (2) weeks after a request by MCIm, ILEC shall provide MCIm with a list of the customer data items which MCIm would have to provide in order to support each required LIDB function. The list shall indicate which data items are essential to LIDB function, and which are required only to support certain services. For each data item, the list shall show the data formats, the acceptable values of the data item and the meaning of those values.

13.4.2.7 ILEC shall provide LIDB systems for which operating deficiencies that would result in calls being blocked, shall not exceed 30 minutes per year.

13.4.2.8 ILEC shall provide LIDB systems for which operating deficiencies that would not result in calls being blocked shall not exceed 12 hours per year.

13.4.2.9 ILEC shall provide LIDB systems for which the LIDB function shall be in overload (degraded performance in accordance with the technical reference in Section 13.7.5) no more than 12 hours per year. Such deficiency period is in addition to the periods specified in Sections 13.4.2.7 and 13.4.2.8 above.

13.4.2.10 ILEC shall provide MCIm with the capability to provision (e.g., to add, update, and delete) NPA-NXX and NXX-0/XX Group Records, and Line Number and Special Billing Number Records, associated with MCIm customers, directly into ILEC's LIDB provisioning process.

13.4.2.11 In the event that end user customers change their local service provider, ILEC shall maintain customer data (for line numbers, card numbers, and for any other types of data maintained in LIDB) so that such customers shall not experience any interruption of service due to the lack of such maintenance of customer data.

13.4.2.12 All additions, updates and deletions of MCIm data to the LIDB shall be solely at the direction of MCIm.

13.4.2.13 ILEC shall provide priority updates to LIDB for MCI data upon MCI's request (e.g., to support fraud protection).

13.4.2.14 ILEC shall provide MCI the capability to directly obtain, through an electronic interface, reports of all MCI data in LIDB.

13.4.2.15 ILEC shall provide LIDB systems such that no more than 0.01% of MCI customer records will be missing from LIDB, as measured by MCI audits.

13.4.2.16 ILEC shall perform backup and recovery of all of MCI's data in LIDB as frequently as MCI may reasonably specify, including sending to LIDB all changes made since the date of the most recent backup copy.

13.4.2.17 ILEC shall provide to MCI access to LIDB measurements and reports at least at parity with the capability ILEC has for its own customer records and that ILEC provides to any other party. Such access shall be electronic.

13.4.2.18 ILEC shall provide MCI with LIDB reports of data which are missing or contain errors, as well as any misroute errors, within the time period reasonably designated by MCI.

13.4.2.19 ILEC shall prevent any access to or use of MCI data in LIDB by ILEC personnel or by any other party that is not authorized by MCI in writing.

13.4.2.20 ILEC shall provide MCI performance of the LIDB Data Screening function, which allows a LIDB to completely or partially deny specific query originators access to LIDB data owned by specific data owners, (in accordance with the technical reference in Section 13.7.5) for Customer Data that is part of an NPA-NXX or NXX-0/XX wholly or partially owned by MCI at least at parity with ILEC Customer Data. ILEC shall obtain from MCI the screening information associated with LIDB Data Screening of MCI data in accordance with this requirement.



13.4.2.21 ILEC shall accept queries to LIDB associated with MCI customer records, and shall return responses in accordance with the requirements of this Section 13.

13.4.2.22 ILEC shall provide mean processing time at the LIDB within 0.50 seconds under normal conditions as defined in the technical reference in Section 13.7.5.

13.4.2.23 ILEC shall provide processing time at the LIDB within 1 second for 99% of all messages under normal conditions as defined in the technical reference in Section 13.7.5.

13.4.2.24 ILEC shall provide 99.9 % of all LIDB queries in a round trip response within 2 seconds.

13.4.2.25 ILEC shall provide LIDB performance that complies with the following standards:

13.4.2.25.1 There shall be at least a 99.9% reply rate to all query attempts.

13.4.2.25.2 Queries shall time out at LIDB no more than 0.1% of the time.

13.4.2.25.3 Data in LIDB replies shall have at no more than 2% unexpected data values, for all queries to LIDB.

13.4.2.25.4 No more than 0.01% of all LIDB queries shall return a missing customer record.

13.4.2.25.5 There shall be no defects in LIDB Data Screening of responses.

13.4.2.25.6 Group troubles shall occur for no more than 1% of LIDB queries. Group troubles include:

13.4.2.25.6.1 Missing Group — When reply is returned "vacant" but there is no active record for the 6-digit NPA-NXX group.